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AMSAT NEWS SERVICE
ANS-312

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

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ANS-312 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 312
>From AMSAT HQ KENSINGTON, MD.
November 8, 2015
To All RADIO AMATEURS
BID: $ANS-312

AO-85 Testing November 8 and 9

Summary of AO-85 testing:

* Please do not try to uplink to AO-85 during the following times (all of which occur while AO-85 is over North America) even though the transponder will be active and you may hear activity.

Sunday November 8, 15:35 through 15:55 UTC
Sunday November 8, 17:15 through 17:35 UTC
Monday November 9, 00:05 through 00:25 UTC
Monday November 9, 01:45 through 02:10 UTC

All dates and times are UTC, all passes are Sunday local time in North America. Stations in North, Central, and northern South America are asked to comply.

You are encouraged to copy telemetry with FoxTelem during these times to forward to the server to help us analyze the test results.

Details of this AO-85 testing:

Sunday, November 8 and into early Monday, November 9 (UTC) the Fox-1 Engineering Team will be testing the COR (carrier operated relay) mode of AO-85. COR is the backup to the IHU failing, if IHU fails AO-85 should continue operating as a simple COR repeater with no CTCSS necessary as long as there is power. In COR mode no telemetry or voice ID is present because those are generated by the IHU.

Orbit 443 ascending, at approximately 15:35 UTC over North America we will test a telemetry high/low reset command. Following the command look for Ground Resets = 2 in the Computer window of FoxTelem. Once that is confirmed, we will command the IHU OFF on the same pass.

Please keep the uplink clear in order to help us test and monitor the telemetry.

Orbit 444 ascending, at approximately 17:15 UTC over North America AMSAT command and engineering stations will test the COR mode on the air to observe performance. Please keep the uplink clear so that we may test without interference, to expedite the testing and allow for good measurements. We may command IHU ON during the pass in order to observe battery voltage in the telemetry. Please have FoxTelem running even if there is no telemetry seen, it may turn on at any time during this pass.

Orbit 448 descending, at approximately 00:05 UTC Monday over North America we will command AO-85 IHU ON. Please keep the uplink clear in order to help us test and monitor the telemetry after the IHU is turned on.

Orbit 449 descending, at approximately 01:45 UTC Monday over North America if we were unable to command IHU ON on orbit 448, we will attempt to command again. Please keep the uplink clear in order to help us test and monitor the telemetry after the IHU is turned on.

During the testing stations outside North, Central and northern South America are invited to use the COR repeater mode and share your assessment of AO-85 receive sensitivity and audio on amsat-bb. Stations in North, Central, and northern South America may use the COR repeater on orbits 445 through 447 and are also invited to share your assessment of AO-85 receive sensitivity and audio on amsat-bb.

Please share this widely to help reach everyone who may be operating AO-85.

The AO-85 team thanks you for your support.

[ANS thanks Jerry N0JY for the above information]

US Radio Amateurs Back in Space and SA AMSAT Kletskous Update

The launch of the Fox 1A CubeSat on 8 October 2015 marked the return of satellites built by AMSAT North America (Amateur Radio Satellite Corporation). US amateurs were the first to build and launch satellites just a few years after the Russians stunned the world with Sputnik 1 in 1957. For several decades they led the pack and built

bigger and better satellite. That that came to an end some five years ago when free rides into space dried up.

AMSAT had to refocus its activities and look at CubeSat as the best alternative possible option as free and more affordable launches became available. One of the options is the NASA ELaNa program. NASA and the Launch Services Program are partnering with several universities to launch small research satellites. These missions provide NASA with valuable opportunities to test emerging technologies and economical commercial off-the-shelf components that may be useful in future space missions. NASA nanosatellites are designed for a wide spectrum of space missions, including biology experiments, testing advanced propulsion and communications technologies.

CubeSats are only 10 x 10 x 10 cm and weigh under 1,3 kg. NASA's Kennedy Space Centre in Florida has adapted the Poly-Picosatellite Orbital Deployer (PPOD) to put these CubeSats into orbit. This deployment system was designed and is manufactured by the California Polytechnic State University in partnership with Stanford University.

Fox-1A was launched from Vandenberg Air Force Base as part of the ELaNa-XII group of satellites. In addition, Fox-1C and Fox-1D are now scheduled to fly together under contract with Spaceflight, which is expected to launch in first quarter 2016. Fox 1B also known as RadFXSat has been assigned a launch that is currently expected to take place in November 2016 from Vandenberg Air Force Base as part of ELaNa-XIV.

"The next 14 months will be rewarding ones for our volunteers, who spent countless hours designing, documenting, collaborating, fabricating, testing and integrating ourFox-1 design into flight hardware," AMSAT president Barry Baines said. "These satellites will be used by radio amateurs, students, and scientists who will benefit from amateur radio capabilities on board, educational opportunities that our spacecraft can provide to the classroom, and the scientific data that will be available from payloads on board provided by university students and faculties," he said.

Organizationally, AMSAT has benefited tremendously from the Fox-1 program as it provides the basis for training anew generation of satellite builders who are now seasoned veterans, capable of tackling more complex and challenging projects.

"AMSAT's reputation as a satellite innovator is enhanced as the Fox-1 design allows seamless integration of scientific payloads that can benefit from a reliable communications downlink capable of low speed and high speed data transmissions," Baines said.

Fox-1A is the first FM repeater satellite in a 1U CubeSat form factor, capable of sending low speed telemetry as well as payload data while the FM repeater is in normal amateur service.

Fox-1B will fly with the Vanderbilt University radiation experiments expected in 2016. Fox-1C will launch on Spaceflight's maiden mission of the SHERPA multi-cubesat deployer planned for the 1st quarter of 2016. U- and L-band uplinks with the VHF band downlink will be available. Fox-1D will launch with Fox-1C. It will include the University of Iowa HERCI experiment. IA Virginia Tech camera will also be included. U- and L- band uplinks with the VHF band downlink will be available. Fox-1E "Evolution" will carry a Mode J linear transponder. The transponder is planned to be 30 kHz wide and will also have a 1200 bps BPSK telemetry beacon.

South African AMSAT's (SA AMSAT) CubeSat, named Kletskous (chatterbox) is making good progress with the third generation space frame to be completed before the end of the year. Good progress is being made with all the subsystems and it is expected that by the end of February 2016, a breadboard layout will be tested. The breadboard layout is also referred to as flatsat as all the subsystems are wired together on the test bench and tested as a fully operational satellite.

SA AMSAT is also planning to include experimental projects and is inviting high school learners and tertiary education students to submit proposals for their science project to be included in Kletskous and make use of the transponder facilities to have the data of their projects downloaded as part of the telemetry stream. Because of the size of a CubeSat and the limited power budget available, proposals must be for projects which have few components and require little power.

For more details about Kletskous visit
www.amsatsa.org.za.
Proposals should be submitted to saamsat(a)intekom.co.za and reach the Kletskous team by 28 February 2016.

See:
http://www.ee.co.za/article/us-radio-amateurs-back-space.html

[ANS thanks Hans, ZS6AKV for the above information]

SAREX Reflector Has Been Shut Down

As previously announced the SAREX Reflector was shut down November 1. What follows is Frank Bauer's KA3HDO, AMSAT V.P. for Human Spaceflight Programs and the ARISS International Chair, final comments to the SAREX Reflector.

"SAREX Reflector Participants:

As previously announced, on November 1, 2015 we are shutting down the SAREX Reflector for future message postings. This posting represents the SAREX reflector's last message.

It is not clear when the SAREX reflector was first started, but from a query to Paul Williamson, who started all the AMSAT reflectors, it has been in operation since at least 1992.

Over the years, many of you have used this forum to gather and share information on our "frequent flyer" SAREX missions on the Shuttle, our operations on the Space Station Mir and, since 2000, our operations on ISS. But times have changed since the early 1990s. For starters, we have moved from the SAREX activities on the Shuttle to ARISS on the International Space Station. AMSAT, ARRL and the ARISS international team of volunteers have also transitioned our ARISS communications to you and are providing you many ways to get information on ARISS. This includes the ARISS Web Site www.ariss.org, the ISS Fan Club web site www.issfanclub.com and the AMSAT web site, www.amsat.org. The ARISS team noticed that many on the AMSAT BB reflector were not seeing late-breaking opportunities for ARISS connections (School, SSTV, QSOs) unless these messages were cross-posted between SAREX and BB. So the decision was made by me to move all the SAREX real-time traffic over to BB and to end the SAREX

reflector postings on this date.

Before we hit “send” and closeout this reflector, I encourage you to sign up and continue to get these messages on AMSAT-BB. If you feel there is too much traffic on BB, you can always sign up for the digest mode, which combines many messages and sends them out periodically (usually daily). And don’t forget that the SAREX archives will still be available on the AMSAT web site, so you can research past messages.

On behalf of AMSAT-NA and the ARISS International Team, I want to thank you for your sustained participation in this phenomenal amateur radio human spaceflight journey. Moreover, we look forward to your further participation and volunteer support in the future.

While there are many ARISS volunteers to thank for their outstanding support, I want to send a particular shout out to Charlie Sufana, AJ9N, who has provided all SAREX reflector participants frequent updates on ARISS status. Thanks Charlie!

As I close this final e-mail, I want to announce that over the next couple months, ARISS will be celebrating its 15ths anniversary of continuous operations on the ISS, starting with November 13, 2015 when we conducted our first ham radio contacts on ISS and on December 21, 2000 when we conducted our first school contact with the Burbank School in Burbank, Illinois. Stay tuned on BB and our web site for ham radio activities that we will be conducting over the year to commemorate these historic events.

73,

Frank H. Bauer, KA3HDO
AMSAT V.P. for Human Spaceflight Programs
ARISS International Chair"

[ANS thanks SAREX and Frank KA3HDO for the above information]

ISS Astronauts Link-Up with ITU WRC-15 in Geneva

The ITU World Radiocommunication Conference 2015 (WRC-15) is taking place in Geneva from November 2-27. On Tuesday, November 3 at 1241 UT there was an amateur radio link-up between WRC-15 and two astronauts on the International Space Station (ISS).

The contact took place using the permanent amateur radio station at the ITU. The station’s normal call sign is 4U1ITU but during the conference the special call sign 4U1WRC is being used.

Students from Institut Florimont were able to use the ITU station to talk to astronauts Kjell Lindgren KO5MOS and Kimiya Yui KG5BPH who were using the amateur radio station in the ISS Columbus module, call sign OR4ISS.

The Amateur Radio on the International Space Station (ARISS) program established the first permanent amateur radio presence in space 15 years ago. The inaugural ARISS contact took place on December 21, 2000, between a member of the ISS Expedition 1 crew and youngsters at Luther Burbank Elementary School near Chicago. Several pupils and a teacher got to chat using amateur radio with “Space Station Alpha” Commander William “Shep” Shepherd KD5GSL.

The ARISS program lets students worldwide experience the excitement of talking directly with crew members of the International Space Station, inspiring them to pursue interests in careers in science, technology, engineering and math, and engaging them with radio science technology through amateur radio.

A video of the contact event can be viewed at:
https://youtu.be/ahdDiuFk2-Y

[ANS thanks AMSAT-UK and WRC15 for the above information]

Help Wanted Astronauts

NASA Press Release: Job Openings for Astronauts

In anticipation of returning human spaceflight launches to American soil, and in preparation for the agency's journey to Mars, NASA announced it will soon begin accepting applications for the next class of astronaut candidates. With more human spacecraft in development in the United States today than at any other time in history, future astronauts will launch once again from the Space Coast of Florida on American-made commercial spacecraft, and carry out deep-space exploration missions that will advance a future human mission to Mars.

The agency will accept applications from Dec. 14 through mid-February and expects to announce candidates selected in mid-2017. Applications for consideration as a NASA Astronaut will be accepted at:

http://www.usajobs.gov

The next class of astronauts may fly on any of four different U.S. vessels during their careers: the International Space Station, two commercial crew spacecraft currently in development by U.S. companies, and NASA's Orion deep-space exploration vehicle.

>From pilots and engineers, to scientists and medical doctors, NASA selects qualified astronaut candidates from a diverse pool of U.S. citizens with a wide variety of backgrounds.

"This next group of American space explorers will inspire the Mars generation to reach for new heights, and help us realize the goal of putting boot prints on the Red Planet," said NASA Administrator Charles Bolden. "Those selected for this service will fly on U.S. made spacecraft from American soil, advance critical science and research aboard the International Space Station, and help push the boundaries of technology in the proving ground of deep space."

The space agency is guiding an unprecedented transition to commercial spacecraft for crew and cargo transport to the space station. Flights in Boeing's CST-100 Starliner and SpaceX Crew Dragon will facilitate adding a seventh crew member to each station mission, effectively doubling the amount of time astronauts will be able to devote to research in space.

Future station crew members will continue the vital work advanced during the last 15 years of continuous human habitation aboard the orbiting laboratory, expanding scientific knowledge and demonstrating new technologies. This work will include building on the regular six-

month missions and this year's one-year mission, currently underway aboard the station, which is striving for research breakthroughs not possible on Earth that will enable long-duration human and robotic exploration into deep space.

In addition, NASA's Space Launch System rocket and Orion spacecraft, now in development, will launch astronauts on missions to the proving ground of lunar orbit where NASA will learn to conduct complex operations in a deep space environment before moving on to longer duration missions on its journey to Mars.

"This is an exciting time to be a part of America's human space flight program," said Brian Kelly, director of Flight Operations at NASA's Johnson Space Center in Houston. "NASA has taken the next step in the evolution of our nation's human spaceflight program - and our U.S. astronauts will be at the forefront of these new and challenging space flight missions. We encourage all qualified applicants to learn more about the opportunities for astronauts at NASA and apply to join our flight operations team."

To date, NASA has selected more than 300 astronauts to fly on its increasingly challenging missions to explore space and benefit life on Earth. There are 47 astronauts in the active astronaut corps, and more will be needed to crew future missions to the space station and destinations in deep space.

Astronaut candidates must have earned a bachelor's degree from an accredited institution in engineering, biological science, physical science or mathematics. An advanced degree is desirable. Candidates also must have at least three years of related, progressively responsible professional experience, or at least 1,000 hours of pilot-in-command time in jet aircraft. Astronaut candidates must pass the NASA long-duration spaceflight physical.

For more information about a career as a NASA astronaut, and application requirements, visit:

http://www.nasa.gov/astronauts

[ANS thanks NASA for the above information]

QB50 project 2016

As reported to the AMSAT-BB, Mineo Wakita JE9PEL informs us "For the purpose of the demonstration and development of CubeSats of the technology of the universities around the world, it is scheduled to be launched all 50 satellites by Ukraine Tsiklon-4 rocket on February 1, 2016. There are still also uncertainties, but I, JE9PEL investigated the current frequencies and summarized it in an Excel file. I'm going to issue in the future this revised version."

http://www.ne.jp/asahi/hamradio/je9pel/51106qb5.png
http://www.ne.jp/asahi/hamradio/je9pel/51106qb5.xls
http://www2.jpl.nasa.gov/calendar/#1602

[ANS thanks Mineo JE9PEL for the above information]

BRICSAT-1 recovery challenge

If anyone has 9600 baud satellite capability and is looking for a challenge, you could be successful in recovering BRICSAT (NO83). BRICSAT simply has a negative power budget. When it wakes up, it should be possible to get in the command to tell it to turn off unnecessary loads and then let it achieve full recovery. As is, it wakes up, sends a few feeble 20 second packets and dies again.

Bricsat has another excellent PSK31 transpodner on it too. You can detect BRICSAT when it awakes by the 20 second packet on the downlink OR by the occasional PSK31 beacon on 435.350 MHz (+/- Doppler). Do not be confused by PSAT which also has a PSK31 tranpsonder on the same frequency. But they have different audio tones for the beacon.

> Downlink: 437.975 MHz, 9600 baud
> Uplink: 145.825 MHz, 9600 baud
> Latest “guess” at the TLE (not sure if this is BRICSat)
> 1 90722U 15294.38156592 +.00051032 +00000-0 +11686-2 0 0166
> 2 90722 054.9895 030.6075 0226665 199.3544 159.8861 15.1979213102332

The commands are simple keyboard dumb terminal commands.
If you think you want to take on this challenge, contact us.
(bruninga at usna.edu)

[ANS thanks Bob WB4APR and Jin KB3UKS for the above information]

Hawaii Launch of Satellites Carrying Amateur Radio Payloads Fails

The November 4 inaugural launch of an experimental US military vehicle carrying several satellites with Amateur Radio payloads into orbit failed in mid-flight shortly after taking off at 0345 UTC from Hawaii. The experimental Super Strypi launch vehicle, carrying a collection of small satellites into orbit as part of the ORS-4 mission for the Department of Defense, was fired from a truss-mounted rail system from the Pacific Missile Range Facility, off Barking Sands on Kauai. According to Spaceflightnow.com, the Super Strypi rocket is designed for low-cost, quick-reaction satellite launches. Destroyed in the demonstration flight were 13 small research spacecraft clustered on the mission for NASA researchers and university students.

None of the satellites carried Amateur Radio transponders, but several were equipped to transmit beacon signals and telemetry on 2 meter, 70 centimeter, and 13 centimeter amateur frequencies. The satellites lost included Argus, EDSN, HawaiiSat-1, ORS-Squared, PrintSat, STACEM, STU-1, and Supernova-Beta. PrintSat carried a 3D printed structure and was designed to measure the performance of the material over the course of its 3 year mission.

Spaceflightnow.com said the experimental launcher apparently lost control and broke up downrange from the launch site. The November 4 maiden flight took place following several delays. The test flight was one of two planned demonstrations of the launcher.

View the Super Strypi & ORS-4 Launch On PMRF 3 November 201 at https://www.youtube.com/watch?v=QsMegDZ_VFQ

Spaceflightnow's detailed coverage of the event can be found at
http://tinyurl.com/ANS312-Spaceflightnow

[ANS thanks ARRL Newsletter for the above information]

ARISS News

+ The scheduled contact with Dragonskolan, Umeå, Sweden was postponed because the scheduled astronaut was tied up in other activities. The contact will be rescheduled for a later date.

+ A Successful contact was made between ITU World Radio Communication Conference 2015 WRC-15, Geneva, Switzerland and Astronaut Kimiya Yui KG5BPH using Callsign OR4ISS.
The contact began 2015-11-03 11:47 UTC and lasted about nine and a half minutes. Contact was direct via 4U1WRC.
ARISS Mentor was ON4WF.

+ A Successful contact was made between Eleanor Palmer School, London, United Kingdom and Astronaut Kjell Lindgren KO5MOS using Callsign NA1SS.
The contact began 2015-11-03 11:47 UTC and lasted about nine and a half minutes. Contact telebridged via VK6MJ.
ARISS Mentor was MØXTD.

Upcoming ARISS Contact Schedule

BORG Monsbergergasse, Graz, Austria, direct via OEØARISS. The ISS callsign is presently scheduled to be OR4ISS. The scheduled astronaut is Kjell Lindgren KO5MOS
Contact is a go for: Mon 2015-11-09 09:42:15 UTC

Ste. Genevieve du Bois Catholic Elementary School, Warson Woods, Missouri, direct via NØKBA. The ISS callsign is presently scheduled to be NA1SS. The scheduled astronaut is Kjell Lindgren KO5MOS
The contact is a go for: Thu 2015-11-12 16:25:16 UTC

[ANS thanks ARISS, Charlie AJ9N and David AA4KN for the above information]

Satellite Shorts From All Over

Very nice coverage, and features Keith, W5IU, with the ARISS contact with Daggett Montessori School in Ft. Worth, Texas:

http://tinyurl.com/ANS312-DaggettMontessori

[ANS thanks JoAnne K9JKM and the Star-Telegram for the above information]

ARISS Contact Documentary

WKTV did a really nice job producing a documentary of the October 23 ARISS contact with West Michigan Aviation Academy.
Here is a link to the youtube video.
https://www.youtube.com/watch?v=gkOvN9CKB9M&authuser=0

[ANS thanks Les Brown, Chief Pilot, West Michigan Aviation Academy
and WKTV ro the above information]

/EX

In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
EMike McCardel, KC8YLD
kc8yld at amsat dot org